consisting of nucleotides 7-36; 274-303 and 566-592 of SEQ ID NO:9; or the group consisting of a reverse complement of a sequence selected from nucleotides 244-273; 528-557, 800-826 of SEQ ID NO:9.

119. (New) An isolated polynucleotide according to claim 118, wherein the sequence is selected from the group consisting of nucleotides 1-273; 274-558; and 559-854 of SEQ ID NO:9.

REMARKS

Amendments

The specification is amended solely to provide citations to sequence identifiers of the Sequence Listing. The claims are amended to more clearly demarcate the recited polynucleotides: support for 12 residue polypeptides is found in claim 1 as filed; support for 32 and 64 consecutive residues of the recited SEQ ID NOS is found on p.4, line 11; support for fragments of SEQ ID NO:2 recited in claim 71 is found on p.26, lines 6-19; support for 24, 36 and 96 consecutive nucleotides of the recited SEQ ID NOS is found on p.19, lines 13-14; support for fragments of SEQ ID NO:4 recited in claim 80 is found on p.26, line 21-31; support for residues 1-942 of SEQ ID NO:4 (claim 81), residues 1-937 of SEQ ID NO:6 (claim 92), and residues 1-284 of SEQ ID NO:10 (claim 114) is found in Table 1, p.4, line 24 - p.8, line 25; support for fragments of SEQ ID NO:6 recited in claim 91 is found on p.27, lines 1-13; support for fragments of SEQ ID NO:8 recited in claims 100-102 is found on p.9, line 22 - p.10, line 15 and at p.25, lines 20-32; support for fragments of SEQ ID NO:8 recited in claims 103-104 is found on p.4, lines 18-19; support for fragments of SEQ ID NO:7 recited in claims 108-110 is found on p.15, line 4 - p.16, line 35 and at p.17, line 20 - p.18, line 31; support for fragments of SEQ ID NO:10 recited in claims 112 and 113 is found on p.10, lines 21-28 and at p.26, lines 1-4, respectively; support for fragments of SEQ ID NO:9 recited in claims 118 and 119 is found on p.19, lines 2-11 and at p.17, lines 1-18, respectively. The specification specifically describes the recited polypeptides and polynucleotides, including polynucleotides encoding the recited polypeptides, e.g. p.14, lines 21-22. These amendments introduce no new matter.

Though believed to be clear and definite for the reasons of record, the objected to language re flanking sequence has been removed.

The prior claims are not believed to be contradictory for including and excluding the same sequences. The claims included subsequences of, for example SEQ ID NO:8 to the extent they were not present in a particular portion of SEQ ID NO:8. In any event, we have canceled from the new claims the language that appears to have been misunderstood.

35USC112, first paragraph (written description)

The claims are in compliance with the written description requirement.

Claims 68-74, 79-84, 88-95, 100-107 and 112-117 require isolated polynucleotides encoding enumerated amino acid sequences; the remaining claims 75-78, 85-87, 96-99, 108-111 and 118-119 are directed to particular subsets thereof comprising particularly enumerated polynucleotide sequences. The specification describes innumerable examples of small subject Robo polypeptides (e.g. Tables 2 and 3 at p.8-10), describes innumerable examples of larger polypeptides comprising these Robo sequences, see, e.g. p.4, line 9; p.4, line 19; Table 12 at p.24; Tables 13-17 at p.25-27, etc.. Hence, the genus of polypeptides comprising small Robo polypeptides is aptly described. The specification describes using the genetic code and particular software for generating polynucleotides encoding the subject Robo polypeptides (e.g. p.14, lines 21-26) and describes natural cDNA sequences encoding such Robo polypeptides (see claims 75-78, 85-87, 96-99, 108-111 and 118-119 and cited support thereof). By reference to the genetic code and conventional algorithms, the specification inherently describes the astronomical genus of polynucleotides encoding the required Robo polypeptides without burdening the public with a virtually endless disclosure of coding sequences. By simple sequence comparison, the disclosure and claims readily permit one of ordinary skill to determine whether a given polynucleotide falls within the scope of the claims. Furthermore, active species are readily screened in routine, convenient, high-throughput assays (e.g. p.13, lines 20-27). Hence, the genus of polynucleotides encoding the recited Robo amino acid sequences is aptly described.

The specification also describes numerous examples of polynucleotides comprising

recited fragments of the disclosed Robo cDNA sequences (e.g. p.19, lines 13-21; Tables 7 and 8 at p.17-19) and numerous examples of larger polynucleotides comprising these fragments (e.g. Tables 5 and 6 at p.15-17). By simple sequence comparison, the disclosure and claims readily permit one of ordinary skill to determine whether a given polynucleotide falls within the scope of the claims. Furthermore, active species are readily screened in routine, convenient, high-throughput assays (e.g. p.19, lines 14-21). Hence, the genus of polynucleotides comprising the recited Robo nucleotide sequences is aptly described.

The specification provides expressly or inherently the detailed chemical structure of a vast number of species representing the claimed genus. Under the present facts, neither the cited caselaw nor the Revised Interim Written Description Guidelines Training Material support an inference that Applicant did not have possession of the invention as claimed, described and exemplified.

35USC 102(b)

The rejection of subject matter relating to SEQ ID NO:5/6 over Wilson et al. is respectfully traversed for the reasons of record. Specifically, Wilson et al. discloses a 2.2 Mb sequence from chromosome III of C. elegans - representing about 2% of the C. elegans genome. None of the claimed sequences: neither SEQ ID NO:05, nor SEQ ID NO:06 nor any closely related sequence, appears in Wilson, either expressly or inherently. In fact, the natural robo homolog in C. elegans is not even on chromosome III, but rather is on the X chromosome.

The only alignment provided with the Action is between a portion of our SEQ ID NO:6 and a Genbank sequence deposit, designated O01632 and purportedly publically available on July 1, 1997 - well within a year of our 10/20/97 priority date. Hence, contrary to the suggestion of the Action, the sequence deposit is not prior art under 35USC102(b).

O01632 is identical in sequence to EMBL/GenBank amino acid entry 1825710, which was generated and submitted by the same authors, but was reportedly released earlier, on Apr 21, 1997. 1825710 (and O01632) appear to encode residues 424-1297 of our SEQ ID NO:6.

Also on Apr 21, 1997, Genbank reportedly released U88183 and 1825711. U88183 (record appended below) is the sequence of X chromosome cosmid ZK377 and its annotation

includes predicted open reading frames, including 1825710 and 1825711. 1825711 appears to encode residues 1-423 of SEQ ID NO:6. Hence, the sequence of natural C. elegans robo (SEQ ID NO:6, also known as sax-3, see p.28, line 2 of our specification) comprises a recombination of 1825710 and 1825711. Note that the annotation reference to the Wilson (1994) reference describing a chromosome III cosmid is not for any X chromosome sequence, but merely for methods used to sequence large parts of C. elegans chromosomes.

To the extent that the sequences of the 1825710 and 1825711 predicted reading frames are citeable art under 35USC102(a), the accompanying Declaration under 37CFR1.131 (revised to include the requested statement that the work was performed in this country) demonstrates that Applicants had possession of the claimed subject matter prior to their publication. Specifically, the Declaration shows that the full-length sequence encoding C. elegans robo (SEQ ID NO:6) was determined by Applicants prior to the April 21, 1997 publication dates of 1825710 and 1825711.

The rejection of subject matter relating to SEQ ID NOS:9/10 over Genbank Accession No.H19148 has been obviated by clarifying the claimed subsequences thereof; the pending claims are not encompassed nor suggested by H19148.

The rejection of subject matter relating to SEQ ID NO:3/4 over Genbank Accession No.I24739 has been obviated by clarifying the claimed subsequences thereof; the pending claims are not encompassed nor suggested by I24739.

35USC 102(a)

The rejection of subject matter relating to SEQ ID NO:11 over Genbank Accession No.AA499103 has been obviated by removing reference to SEQ ID NO:11 which was included by mistake. Applicants note that the Action appears to misidentify the cited art as AA499103 rather than the correct AA499193 and erroneously recites claims "10-12, 25-28 and 50" when only claim 51 was apparently intended (only claim 51 referenced SEQ ID NO:11). Confirmation is requested.

The rejection of subject matter relating to SEQ ID NO:7/8 over Genbank Accession No.Z95705 is obviated by the enclosed second 131 Declaration demonstrating that Applicants

had possession of the claimed subject matter relating to SEQ ID NO:7/8 prior to the cited May 25, 1997 publication date attributed to this cited art.

35USC 103(a)

The rejection of subject matter relating to SEQ ID NOS:7/8 over Genbank Accession No.Z95705, in view of Sambrook, is obviated by the enclosed Second 131 Declaration demonstrating that Applicants had possession of the claimed subject matter relating to SEQ ID NOS:7/8 prior to the May 25, 1997 publication date attributed to Genbank Accession No.Z95705.

The Examiner is invited to call the undersigned if she would like to amend the claims to clarify the foregoing or seeks further clarification of the claim language.

Applicants hereby petition for any necessary extension of time pursuant to 37 CFR 1.136(a). The Commissioner is hereby authorized to charge any fees or credit any overcharges relating to this communication to our Deposit Account No. 19-0750 (order no.B98-006-2).

Respectfully submitted,
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encl.   Supplemental 131 Declaration (1 p) plus alignment (5 p)
       Second 131 Declaration (1 p) plus attachement (2 p)